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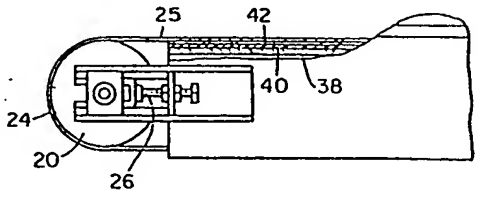
(54) **Shock absorbent moving platform.**

(57) A moving platform for use in exericising, said platform comprising a fixed platform (38) of flat rigid material, a continuous belt (24) having an upper run (25) supported by said platform, a first layer (40) consisting of shock absorbent material mounted between said fixed platform (38) and said belt (24) and a second layer (42) consisting of polymeric, low friction, low compliance material mounted adjacent said first layer (40), to facilitate movement of said belt (24) relative to said fixed platform (38).

Fig.2.



EP 0 196 877 A2

DESCRIPTION

The present invention relates to a moving platform for use in exercising.

The moving platform of the present invention may be used for exercising humans or, more particularly, animals such as horses. It is now proposed, according to the present invention, to provide a moving platform for use in exercising, said platform comprising a fixed platform of flat rigid material; a continuous belt having an upper run supported by said fixed platform; a first layer consisting of shock absorbent material mounted between said platform and said belt and a second layer consisting of polymeric low friction, low compliance material, mounted adjacent said first layer, effective to facilitate movement of said belt relative to said fixed platform.

Such a construction enables a person or animal such as a horse to exercise, the first layer allowing for the intermittent shocks produced during use, to be effectively absorbed and the second layer, enables the belt to move relatively easily over the first layer in a controlled manner. Preferably the first layer is mounted directly on the rigid fixed platform and the second layer is mounted on the first layer in contact with the belt. It is also contemplated, however, that the first layer should be mounted directly on the belt, that is to say, form an inner shock absorbent layer to the belt which moves around the rollers over which the belt passes, and the second layer should be mounted between the first layer and the rigid platform, for example, being mounted directly on the rigid platform itself.

While many different materials may be used it is preferred that the first layer should be formed of a high compliance, closed cell polymeric foam. Alternatively a rubber foam could be used. Advantageously, in order to absorb the shocks sufficiently, the first layer is between

10 and 15 mm and preferably 12 mm in thickness. Such a structure provides particular protection to the hooves and legs of horses.

While the belt may be constrained to move against some form of resistance, as in a conventional treadmill, preferably the belt is provided with means to drive it round a closed path with the upper run of the belt moving over the platform and advantageously, these drive means are made to provide adjustable speed of the belt.

In order further to exercise the person or animal, the rigid platform is advantageously pivotally mounted on a support and means are provided to lift one end of the platform, so that the platform tilts about the support. Thus, the person or animal using the platform of the invention can, in effect, be caused to run uphill.

The speed of movement can be adjusted with sensors and a suitable sensor operated control device. Thus, it will be appreciated that the construction of the present invention can duplicate conditions to test the horse's effectiveness and potential anywhere between a walk and a full gallop. The variable gradient adjustment provided by tilting the platform, combined with the variable speed, may be used to exert pressure on a horse to closely simulate race conditions. It can also be used to assess fitness and the condition of the horse. For example, specially designed attachments, involving the use of a computer printout facility can be used to monitor heart rate, ECG details, haemotology count and lactic acid levels. When a horse starts working, vital functions accelerate, for example, the horse carries out heavier breathing and sweating, and at the same time, inward changes such as temperature, blood flow to the muscles, heart rate and haemoglobin in the blood will all increase. Experience has shown that after the increase a steady stage is reached in about 2 to 5 minutes.

In order that the invention may more readily be understood, the following description is given, merely by

way of example, reference being made to the accompanying drawings, in which:-

Figure 1 is a side elevation of one embodiment of moving platform according to the invention;

Figure 2 is an enlarged cross-section of the fixed platform, the two layers and belt and the drive means for the belt; and

Figure 3 is a similar view to Figure 2 of a second arrangement of these components.

Referring first to Figure 1, the moving platform for use in exercising or treadmill is indicated by the geeneral reference numeral 10 and comprises a frame 12 mounted on a support 14 by a pivot 16. An elevating jack 18 may be used to raise and lower the left end as seen in Figure 1.

Mounted on the frame 12 are rollers 20 and 22 about which a fabric reinforced rubber belt 24 is passed. The roller 20 is provided with a tensioning bearing 26 to keep the belt taut.

Mounted on the frame is an electric motor 28 which drives a hydraulic pump 30 which derives hydrualic oil from a reservoir 32 via a suction filter 34. The output of the pump is fed to a hydraulic motor 36 by means of which the roller 22 and thus the belt 24 can have its speed accurately and infinitely variably controlled.

Mounted below the upper run 25 of the belt 24 and on the frame 12, is a rigid, fixed platform 38. Superimposed on this, as seen in Figure 2, is a first layer 40 of shock absorbent material such as a high compliance, closed cell polymeric foam. Mounted on top of the first layer 40 is a second layer 42 of polymeric, low friction, low compliance material which lies immediately below the undersurface of the upper run 25 of the belt 24. It will be appreciated that the first layer allows for absorbtion of shock of a person or animal on the treadmill 10 and the second layer facilitates easy movement of the belt over the first layer.

In an alternative arrangement shown in Figure 3, the

first layer 40 is applied directly to the lower surface of the belt 24 and moves around the rollers 20, 22, with the belt. To prevent wear, an inner belt (not shown) may be provided inwardly of layer 40,50 so that the layer is sandwiched between the belt 24 and the inner belt. The second layer is shown as being mounted on the upper surface of the rigid fixed platform 38, although it is conceivable it could also form the lower surface of the belt, below the first layer 40 and any inner belt. Here again the first layer absorbs the shock and the second layer facilitates movement of the belt relative to the platform.

In order to make it easier for the horse to mount the treadmill, a ramp 44 is pivotally mounted on the frame 12 and the sideways position of the horse is assured by two steel mesh side walls 46, one on each side, and a barrier (not shown) extends between these to define a forward position for the horse. The elevating jack can be operated to tilt the platform upwardly, that is in a clockwise direction. This elevating jack may be manually operated or could be controlled hydraulically from the output of the pump 30.

C L A I M S

1. A moving platform for use in exercising, said platform being characterised in that it comprises a fixed platform (38) of flat rigid material, a continuous belt (24) having an upper run (25) supported by said platform, a first layer (40) consisting of shock absorbent material mounted between said fixed platform (38) and said belt (24) and a second layer (42) consisting of polymeric, low friction, low compliance material mounted adjacent said first layer (40), to facilitate movement of said belt (24) relative to said fixed platform (38).

2. A moving platform according to claim 1, characterised in that said first layer (40) is mounted directly on said rigid fixed platform (38) and said second layer (42) is mounted on said first layer, in contact with said belt.

3. A moving platform according to claim 1, characterised in that said first layer (40) is mounted directly on said belt (24) and said second layer (42) is mounted between said first layer (40) and said rigid platform (38).

4. A moving platform according to claim 1, 2 or 3, characterised in that said first layer is formed of high compliance, closed cell polymeric foam.

5. A moving platform according to claim 1, 2 or 3, characterised in that said first layer is formed of rubber foam.

6. A moving platform according to any preceding claim, characterised in that said first layer is between 10 and 15 mm, preferably 12 mm in thickness.

7. A moving platform according to any preceding claim, characterised in that said belt (24) is provided with means (28 to 36) to drive it round a closed path with the upper run (25) of the belt moving over the platform (38).

8. A moving platform according to claim 7, characterised in that said belt driving means is of adjustable speed.

9. A moving platform according to any preceding claim, characterised in that said rigid platform (38) is pivotally mounted on a support bracket (14, 16) and in that means (18) are provided to lift one end of said platform, so that the platform tilts about the support.

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Fig. 1.

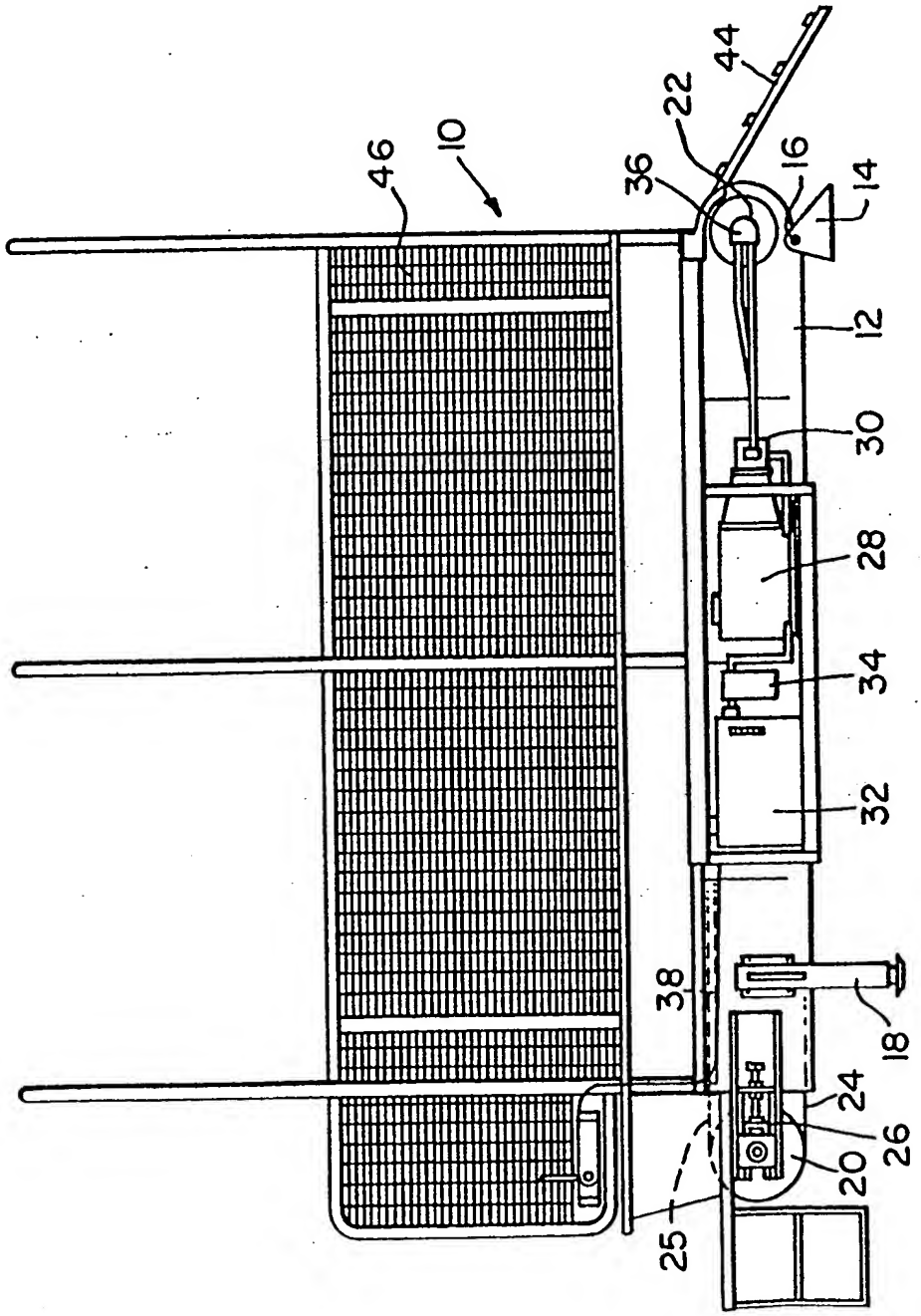

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Fig. 2.

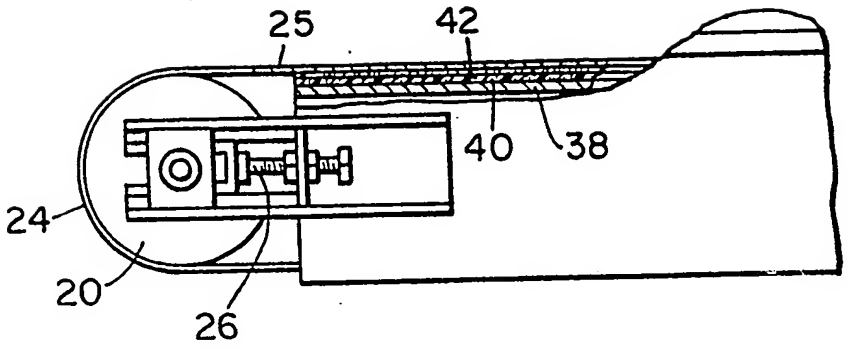

Fig. 3.